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5th International Whey Conference

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Textural Improvement of Low Fat Slow Churn type Ice Creams Using Whey Proteins

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Safeway Inc. is one of the largest food and drug retailers in North America. As of December 29, 2007, the company operated 1,743 stores in the Western, Southwestern, Rocky Mountain, Midwestern and Mid-Atlantic regions of the United States and in western Canada. In support of its stores, Safeway has an extensive network of distribution, manufacturing and food processing facilities.

SAFeway 

VONS

Dominick's 

Randall's

Tom Thumb

GENUARDI'S 

PAVILIONS

CARRS | SAFeway 

Pay 'n Save Foods



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Core

Expertise

Aspirational

Wellness



MANUFACTURING AND PROCESSING FACILITIES

Year-end 2007	U.S.	Canada
Milk Plants	6	3
Bakery Plants	6	2
Ice Cream Plants	2	2
Cheese & Meat Packing Plants	-	2
Soft Drink Bottling Plants	4	-
Fruit & Vegetable Processing Plants	1	3
Cake Commissary	1	-
	20	12

PERCENTAGE OF STORES WITH SPECIALTY DEPARTMENTS AND FUEL STATIONS

Year-end 2007	
Specialty Departments	
Deli	97%
Bakery	95%
Floral	96%
Pharmacy	76%
Fuel Stations	21%

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\$42

BILLION IN TOTAL SALES

\$888

MILLION IN NET INCOME

1,743

STORES IN OPERATION

329

O ORGANICS™ PRODUCTS



Slow Churn Ice Cream Technology

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Slow Churned: Fat molecules are kneaded at colder temperatures to taste like higher butter fats

Licensees	Product	Process Used
Dreyer's (Nestle)	Grand Light	Slow Churned
Unilever	Breyer's	Double Churned
Based on Invention of Dr. Erich J. Windhab (1993) on ETH – Federal Institute of Technology, Zurich	Twin Screw Extruder <5°F	



Comparison of Slow Churn Methods

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Comparisons	Slow/Double Churn Technology	Safeway's Churned Rich & Creamy
Method	Equipment	Ingredient Formula
Process	Low Temperature/Freezing	Conventional (22°-24° F)
Application	Lower Fat Products, Plain, limitation with Variegates	Broad (Nonfat – Full Fat), No limitation
Finished Product	Mouth-feel of Full Fat	Mouth-feel of Full Fat
Appearance	Whipped Butter	Conventional Ice Cream
Economics	Relatively Expensive	Modest Cost Increase
Capital Investment	Large	None
Flexibility	Limited	High



Why Low Fat Ice Creams?

- ~ The United States consumers have concerns over increasing rates of obesity (average weight gain 1-3 lbs. per year) with health risks
- ~ Consumer Surveys indicate the most important component on food labels are calories, total fat, and sugar
- ~ Consumers are motivated to consume low fat, great tasting products
- ~ Slow churned ice cream sales were up 75% in 2005, the first year



Typical Ice Cream Ingredients

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- ~ Milk
- ~ Cream
- ~ Sugar
- ~ Non Fat milk solids (MSNF)
 - è Condensed Milk
 - è Non Fat Milk Powder
 - è Caseinates
 - è Whey Ingredients (25% of MSNF)
- ~ Stabilizer & Emulsifier
- ~ Color
- ~ Flavors
- ~ Variegates (Chocolate, Fruit/Nut Pastes)
- ~ Inclusions (Fruit, Nuts, Chocolate chips, Candies, etc.)



Safeway Churned Rich & Creamy

- ~ Primary Ingredient: Whey Protein Isolate
- ~ Secondary Ingredient: Stabilizers and Emulsifiers
- ~ Characteristics: Compared to Standard (10% BF)
- ~ Texture: Similar to Full Butter Fat & Richer taste, Butter fat 5-6%, Calories are 33% lower, with broader applications.



Safeway Churned Rich & Creamy

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History

- ~ Safeway Marketing initiative in 2005 to develop its own brand slow churn ice cream
- ~ Product development period from 2005-2006
- ~ Consumer testing against Nestle in 2006
- ~ Market Introduction in January 2007 included 16 flavors under the “Select” brand
- ~ Expanded to cup line and Pro-biotc+ Omega-3 in 2008
- ~ Expected release of novelties in 2009

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Function of Whey Protein in Ice Cream

- ~ Mix emulsion stability, viscosity
- ~ Ice crystal control (water, binding)
- ~ Air cell and stability (overrun)
- ~ Eating quality, mouth-feel
- ~ Nutrition, higher protein, higher biological value
- ~ Fat replacement, calorie reduction



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Whey Protein Composition (Globular)

- ~ B - Lactoglobulin
- ~ A - Lactoglobulin
- ~ Immunoglobulin
- ~ Compliment with milk proteins (Casein) – miscelle in the mix development

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Phoenix, AZ USA